

cuted by any public authority in the interest of public policy. If it were established, as it has not been, that the contention of appellant was literally true, it would still not be sufficient grounds for the invalidation of appellant's expulsion.

If the quotations above given, as taken from briefs submitted by the legal counsel of the Kern County Medical Association, and from items appearing in the Supreme Court's decision of January 12th are of interest, then a perusal of the complete opinion should be worth while. (See page 74.)

Other State Association and Component County Society News.—Additional news concerning the activities and work of the California Medical Association and its component county medical societies is printed in this issue, commencing on page 80.

EDITORIAL COMMENT†

FLOTATION BACTERIOPHAGE

The possibility of increasing the titer of bacteriophage 100,000 fold, by the application of flotation methods, is recently reported by Block¹ of the Hygienic Institute, Basel, Switzerland.

The commonest application of flotation methods is in the separation of metallic particles from pulverized ore. Ore powder is placed in water with a thin surface layer of oil and air forced through under pressure. Massive Foam formation results. The metallic particles are absorbed on the foam, while the hydrophilic quartz granules remain behind. It has been shown by Schutz² that a similar technic is applicable to the separation of hemaglobin and certain other dissolved colloids. The Schutz flotation apparatus consists essentially of two connected glass bulbs, through one of which a stream of air is forced, the resulting foam being driven over into the second bulb.

Block placed 10 cc. of filtered phage-lysed *B. coli* in the first chamber, and collected 1 cc. of foam-condensate in the second chamber. Parallel titrations were made of 10-fold dilutions of this condensate. The initial filtrate contained 109 phage units per cc. The diluted condensate had a titer of 1014 units, a 100,000 times increase in lytic titer. The highly-active "foam lysin," however, did not retain this exalted titer permanently. Within two to three hours, at room temperature, the titer had sunk to its initial level.

To account for the observed increase in phagic

activity, Block assumes that the ordinary phage particle is a colloidal aggregate, of at least 100,000 phage molecules. Assuming an initial diameter of 50 millimicrons for *B. coli* phage,³ Block calculates that each phage molecule must be in the neighborhood of 1 millimicron in diameter. This corresponds roughly with the measurements of Bronfenbrenner,⁴ who found that, while most typhoid phages are from 20 to 30 millimicrons in diameter, there are certain active particles as small as from 1 to 2 millimicrons. Moriyama and Ohashi⁵ of Shanghai, China, have recently shown that giant phage particles (90 millimicrons), medium-sized particles (10 millimicrons) and midget particles are equally potent bacteriolytic agents.

According to Block's theory, the ordinary giant phage aggregate is spread out and dispersed as a monomolecular layer on foam surfaces, and is thus mechanically depolymerized in such a way as to increase the number of active particles 100,000 fold. On standing, high-molecular phage aggregates are reformed, thus restoring the original low titer. Thus conceived, bacteriophage has colloidal properties similar to those of certain plant viruses. Best and Bald,⁶ for example, have shown that the infectious units of tobacco mosaic virus have a tendency to assemble in low-virulent clumps or strands, which are readily broken up by shaking, thus restoring the original high virulence.

Block, however, has not yet succeeded in making his "foam lysin" sufficiently stable for clinical use. Desiccation in a lyophile apparatus, however, has not yet been tried.

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BILE DEFICIENCY AND GIZZARD EROSION

An entirely new factor in nutritional physiology is suggested by studies of the cause and cure of gizzard erosion in chicks, recently reported by Almquist¹ and his colleagues of the College of Agriculture, University of California.

In 1934, Dam and Schonheyder,² of the University of Copenhagen, called attention to the prevalence of ulcerations of the gizzard lining of the chicks when placed on certain deficiency diets, both stunted growth and gizzard erosions being noted by the Danish investigators. It was after-

† This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comments by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California Medical Association to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

wards shown,* however, that if adequate alfalfa extract (vitamin K) is added to the deficiency diets, normal bodily growth results without preventing the accompanying gizzard erosion. Such vitaminized diets are evidently complete in all respects, except for the necessary gizzard factor.

A definite lead as to the nature of the anti-gizzard erosion factor came from the later observation* that one-half per cent bile acids, particularly cholic acid, is an effective dietary supplement preventing or curing deficiency gizzard erosion. The therapeutic effect of cholic acid is apparently due to its absorption by the gizzard lining, analyses showing a seven-fold increase in the cholic-acid content of the lining, as a result of bile feeding, and a four-fold increase in the cholic-acid percentage of gall bladder bile. In chicks the bile normally, at least at intervals, flows backward into the gizzard, where it apparently functions as a natural protective agent. Any condition, such as disease, malnutrition or poor environment, which might inhibit the normal bile secretion, either directly or indirectly, would, therefore logically, lead to or enhance a condition of gizzard erosion.

It was shown at about the same time by Bradley and Ivy* that cincophen, administered either orally or intravenously, will cause gastric ulcers in dogs. Cheney* found that cincophen will also produce gizzard erosion. Since cincophen reduces cholic acid synthesis in both dogs and chicks, the addition of cholic acid to cincophen diets would presumably prevent its local toxic effects. This hope has been confirmed for chicks by the California investigators.*

There is thus conclusive evidence that the immediate cause of gizzard erosion in chicks is a qualitative or quantitative bile deficiency. A practical method of applying this conclusion is suggested by Almquist's current demonstration,* that cow's milk, given in place of drinking water, will protect or cure chicks of dietary or cincophen gizzard ulcers. Cow's milk is free from detectable amounts of cholic acid. It is, however, an effective cholagogue, increasing the gallbladder bile volume and the percentage of cholic acid in the bile.

The anti-erosion cholagogue in cow's milk is costostable, resisting both boiling and steam distillation. It is, however, completely denatured or otherwise inactivated on evaporation. Commercial dried milks, dried buttermilks and dried wheys have no demonstrable anti gizzard-erosion properties. This negative finding is of major economic interest to the poultry industry, and is not without clinical implications.

Attempts to determine the chemical or physico-chemical nature of the natural anti-erosion cholagogue in liquid milk are now in progress in the California laboratories.

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MEDICAL EPONYM

Hippocrates

The complete works of Hippocrates (460-370 B.C.) have never been translated into English. Two collections of selected treatises are available: a group of four volumes in the *Loeb Classical Library* (New York: G. P. Putnam's Sons, 1923-1931), which parallel Greek text and English translations by W. H. S. Jones and E. T. Withington, and Dr. Francis Adams's *The Genuine Work of Hippocrates*, in two volumes, originally printed for the Sydenham Society, London, 1849, and now available in this country in the form of a reprint published by William Wood and Company, New York. C. G. Kühn's *Magni Hippocratis Opera Omnia* (Lipsiae: Car. Knoblochii, 1825-1927), in three volumes, is a standard edition of the Greek text with a Latin translation. Émile Littré's *Oeuvres complètes d'Hippocrate* (Paris: J.-B. Bailliére, 1839-1861), in ten volumes, with a comprehensive index, in the best modern edition. Robert Fuchs's *Hippokrates, sämtliche Werke* (Munich: H. Lüneburg, 1895-1900), in three volumes, is a convenient German translation, but does not contain the Greek text.

Hippocratic Facies. The classic description of the facies in sepsis occurs in the *Prognostics* (Adams, English edition, 1:236, and American edition, 1:195; Loeb, 2:8; Littré, 2:114; Kühn, 1:89; Fuchs, 1:452):

"The nose of the patient appears pointed, he is hollow-eyed, and his temples are sunken; his ears are cold and shrunken and their lobes stand out; the skin of the brow is drawn and tense and dry, the complexion wan or livid."

Hippocratic Nails. These are described in the *Prognostics*, the *Coan Prognostics*, the *Parts of Man* and elsewhere. The following quotation is from the *Prognostics* (Adams, English edition, 1:248, and American edition, 1:206; Loeb, 2:34; Littré, 2:152; Kühn, 1:106; Fuchs, 1:462):

"In order to recognize empyema in all cases, it is necessary to note the following: the fever does not abate; during the day it is slight, at night marked; there is profuse perspiration, an irritative cough without the production of any notable sputum; the eyes become sunken, the cheeks flushed, and the fingernails become curved and the fingers warm especially at the tips; in some cases the feet swell, there is no desire for food, and vesicles appear over the body."

Hippocratic Succussion. The pathognomonic significance of this sign in hydropneumothorax was unknown to the Father of Medicine and his school. The maneuver is described in several of the Hippocratic treatises. The quotation is from Book Two of the *Diseases* (Littré, 7:70; Kühn, 2:258; Fuchs, 2:438):

"When fifteen days have elapsed from the onset, bathe the patient in hot water, place him on a firm seat, and let an assistant hold his hands while you, yourself, shake him by the shoulders so that you may hear on which side the sound of the disease may be perceived."—R. W. B., in *New England Journal of Medicine*, Vol. 224, No. 21.